ACC.12
61st Annual Scientific Session & Expo
ACC-i2 with TCT innovation in intervention

E742
JACC March 27, 2012
Volume 59, Issue 13

Congenital Cardiology Solutions

IDENTIFIED MORTALITY RISK FACTORS ASSOCIATED WITH PRESENTATION, INITIAL HOSPITALIZATION, AND INTERSTAGE PERIOD FOR THE NORWOOD OPERATION: A REPORT FROM THE JOINT COUNCIL ON CONGENITAL HEART DISEASE NATIONAL QUALITY IMPROVEMENT COLLABORATIVE

ACC Oral Contributions
McCormick Place South, S105a
Saturday, March 24, 2012, 11:30 a.m.-11:45 a.m.

Session Title: From Targeting Errors to UNOS: How Quality and Databases Can Impact Clinical Care
Abstract Category: 27. Congenital Cardiology Solutions: Pediatric
Presentation Number: 901-7

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Background: Despite improvements in the care of children following the Norwood (NW) operation, interstage (IS) mortality remains significant. The JCCHD NPC-QIC Registry captures clinical process and outcomes data on infants who are discharged into the outpatient IS after NW procedure. We sought to identify potential risk factors for IS mortality using the registry data.

Methods: All patients who either completed stage 2 palliation or died in the IS as of 06/17/2011 were included. Enrollment, NW hospitalization, IS, and outcome data were ascertained from the registry with institutional and patient identifiers masked. The analysis was considered exploratory and hypothesis generating with primary emphasis placed on strength of association and p-value used to only avoid emphasizing likely chance associations. Kaplan-Meier survival analysis was used to screen for univariate predictors. Cox multiple regression modeling was then used to identify potential independent predictors.

Results: 247 patients who met the criteria were registered between 7/28/2008 and 3/08/2011 from 33 surgical sites. There were 23 IS mortalities (9.3%). Potentially important independent predictors of mortality from the data are tabulated below:

Predictor	Relative Risk	95% Conf. Interval
HLHS w/ aortic atresia & mitral atresia	2.4	0.7-8.6
HLHS w/ aortic atresia & mitral hypoplasia	5.2	1.0-28.3
HLHS w/ aortic hypoplasia & mitral atresia	13.0	2.3-73.2
HLHS w/ aortic hypoplasia & mitral hypoplasia	2.8	0.5-17.1
Earlier gestational age	11.1	2.9-50.0
Lower birth weight	2.2	0.3-16.7
Female	1.9	0.6-5.7
Last documented feeding route: NG/NJ (±oral feeding)	5.5	1.9-16.4
Fewer post-operative IV vasoactive medications used	2.2	1.5-3.3
Lower percentage of clinic visits with primary cardiologist identified and documented	3.1	1.7-5.9
Lower weight gain from birth to Norwood	1.5	1.0-2.2
Higher percentage of readmissions that are unscheduled	5.3	1.9-15.2
Seizure medication use at Norwood discharge	12.5	2.5-61.4
Higher percentage of clinic visits that are due to red flags	1.6	010-2.8
Higher percentage of readmissions that are due to adverse events	1.8	0.9-3.6

Conclusion: IS mortality rate remains an important concern and there appear to be multiple potential markers of increased risk. Future efforts should focus on further exploration of the role of each factor and incorporating consideration of indicators into surveillance schemes.